09/973,778
Art Unit: 1731

Amendments to the Specification

Please amend the numbered paragraphs as follows:

-- **[0004]** Another co- pending patent application, serial no. 09/956,916 filed on September 21, 2001, entitled "Method of Depositing an Optical Quality Silica Film by PECVD", shows that to such a high temperature thermal treatment are associated some residual stress-induced mechanical problems of deep-etched optical elements (mechanical movement of the side-walls), some residual stress-induced mechanical problems at the buffer/core interface or at the core/cladding interface (micro-structural defects, micro-voiding and separation) and some residual stress-induced optical problems (polarisation dependant power loss) which can be eliminated by an improved process allowing the simultaneous optimization of the optical and of the mechanical properties of buffer (cladding) and core in a seven-dimensional space, namely a first independent variable, the SiH_4 flow; a second independent variable, the N_2O flow; a third independent variable, the N_2 flow; a fourth independent variable, the PH_3 flow; a fifth independent variable, the total deposition pressure; a sixth independent variable, the optimised post-deposition thermal treatment; and the observed silica-based optical elements characteristics. –

-- **[0010]** Our co-pending application serial no. 09/956,916 filed on September 21, entitled "Method of Depositing an Optical Quality Silica Film by PECVD" describes a technique which shows that the simultaneous optimization of the optical and of the mechanical properties of buffer (cladding) and core in a seven-dimensional space: a first independent variable, the SiH_4 flow; a second independent variable, the N_2O flow; a third independent variable, the N_2 flow; a fourth independent variable, the PH_3 flow; a fifth independent variable, the total deposition pressure; a sixth independent variable, the optimised post-deposition thermal treatment; and the observed silica-based optical elements characteristics is key to achieving the required 'delta-n' while eliminating the undesirable residual Si:N-H oscillators (observed as a FTIR peak centered at 3380 cm^{-1} whose 2nd harmonics could cause an optical absorption between 1.445 and 1.515 μm), SiN-H oscillators (centered at 3420 cm^{-1} whose 2nd harmonics could cause an optical

absorption between 1.445 and 1.479 µm) and SiO-H oscillators (centered at 3510 cm^{-1} and whose 2nd harmonics could cause an optical absorption between 1.408 and 1.441 µm) after an optimised thermal treatment in a nitrogen which can provide improved silica-based optical elements with reduced optical absorption in the 1.55 µm wavelength (and/or 1.30 wavelength) optical region without the residual stress-induced mechanical problems of deep-etched optical elements (mechanical movement of side-walls), without the residual stress-induced mechanical problems at the buffer/core or core/cladding interfaces (micro-structural defects, micro-voiding and separation) and without the residual stress-induced optical problems (polarisation dependant power loss). --

-- **[0012]** An object of the present invention is to provide an optimised process which allows the elimination of these residual stress-induced mechanical problems of deep-etched optical elements (mechanical movement of the side-walls), of these residual stress-induced mechanical problems at the buffer/core interface or at the core/cladding interface (micro-structural defects, micro-voiding and separation) and of these residual stress-induced optical problems (polarisation dependant power loss). --

-- **[00111]** It is clear from the various FTIR spectra that our pending patent application titled 'Silica waveguides for Mux/Dmux optical devices' allows the use of various PH_3 flow rates from 0.00 std litre/min to 0.65 std litre/min. as to achieve core with the required 'delta-n' after a 180 minutes thermal treatment in a nitrogen ambient at a reduced temperature of 800°C while maintaining excellent optical quality.

Optical absorption of PECVD buffer (cladding) and core deposited by our ~~e~~co-pending patent application serial no. 09/956,916 ~~entitled Method of Depositing an Optical Quality Silica Film by PECVD~~after a 30 minutes thermal treatment in a nitrogen ambient at a reduced temperatures of 600 to 900°C. --